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UTILITY PATENT

2681  
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S-17-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of: ALEXANDER, Jr., William,

Group Art Unit: Unknown

Serial No.: 10/056,157

Examiner: Unassigned

Filed: 01/24/02

Attorney Docket No.: 001.0058  
(CE04625N)

For: METHODS AND APPARATUS FOR DETERMINING A DIRECTION OF  
ARRIVAL IN A WIRELESS COMMUNICATION SYSTEM

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Technology Center 2600

**CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8(a)**

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Assistant Commissioner for Patents  
Washington, D.C. 20231

on 4-24-02 Signature: Barbara J. Couch

Barbara J. Couch

**INFORMATION DISCLOSURE STATEMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Commissioner:

In accordance with 37 C.F.R. 1.56 and in a manner prescribed by 37 C.F.R. 1.97 and 1.98, this Information Disclosure Statement IDS is being submitted herewith for consideration by the United States Patent and Trademark Office.

I. **CONTENT**

This IDS includes:

- ☒ A list of all patents, publications, applications, or other information submitted for consideration by the Office on PTO form 1449, which is included herewith;

- ☒ A legible copy of: (i) each U.S. patent application publication and U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion; and (iv) all other information or that portion which caused it to be listed, unless subsequently provided in this IDS.

II. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

- ☒ Except as may be subsequently indicated in this section II, a concise explanation is not required as all of the patents, publications, applications or other information are in the English language.
- ☐ A concise explanation of the relevance, as it is presently understood by the individual designated in 1.56(a) most knowledgeable about the content of the information, of all patents, publications, applications or other information listed that is not in the English language.
- ☐ A copy of the translation of a non-English Language document, or portion thereof.
- ☐ Any patent, publication, pending U.S. application or other information that is listed on PTO form 1449, which are not enclosed herewith were previously cited by or submitted to the Office in one of the following applications that has been relied on for an earlier effective filing date under 35 U.S.C 120 and the IDS submitted in the earlier application complies with paragraphs (a) through (c) of 1.98:

U.S. Application Serial No.	U.S. Filing Date

III. THIS IDS IS BEING FILED UNDER 37 C.F.R. 1.97(b): (check one box)

- ☐ Within three months of the filing date of a national application other than a continued prosecution application under 1.53(d).
- ☐ Within three months of the date of entry of the national stage as set forth in 1.491 in an international application.
- ☒ Before the mailing date of a first Office Action on the merits. In the event that a first Office Action on the merits has been mailed, please consider this IDS under 37 C.F.R. 1.97(c) and see the statement under 1.97(e) or

charge deposit account 13-4771 the fee specified by 37 C.F.R. 1.17(p) if such statement is not selected in Section VI.

- ☐ Before the mailing of a first Office Action after the filing of a request for continued examination under 1.114.

IV. THIS IDS IS BEING FILED UNDER 37 C.F.R. 1.97(c):

- ☐ After the period specified in 27 C.F.R. 1.97(b) and before the mailing date of any of a final action under 1.113, a notice of allowance under 1.311 or an action that otherwise closes prosecution in the application, and accompanied by:

☐ a statement specified in 1.97(e) as subsequently provided in this IDS; or

☐ the fee set forth in 1.17(p).

V. THIS IDS IS BEING FILED UNDER 37 C.F.R. 1.97(d):

- ☐ After the period specified in 27 C.F.R. 1.97(c) and on or before the payment of the issue fee, and it is accompanied by a statement specified in 1.97(e) as subsequently provided in this IDS and the fee set forth in 1.17(p).

VI. Statement under 37 C.F.R. 1.97(e) (check only one box)

The undersigned hereby states that:

- ☐ Each item of information contained in the IDS was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS.

- ☐ No item of information contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 C.F.R. 1.56(c) more than three months prior to the filing of this IDS.

VII. PAYMENT OF FEES (check one box)

- ☐ A check in the amount of \$ \_\_\_\_\_ is enclosed for fees due with respect to this IDS.

VIII. CONCLUSION

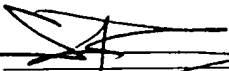
It is respectfully submitted that the claims presently on file patently distinguish the present invention from each of these references cited in this IDS. The references cited in this IDS are being cited only in the interests of candor and without any admission that they constitute statutory prior art or contain matter which anticipates the invention or which would render the same obvious, either singly or in a combination, to a person or ordinary skill in the art. Furthermore the filing of this IDS should not be construed to be an admission that the information cited in this IDS is, or is considered to be, material to patentability as defined in 1.56(b). In addition, the filing of this IDS should not be construed as a representation that a search has been made.

If the Examiner has any questions concerning these IDS, the Examiner is requested to contact the undersigned at the telephone number associated with Customer No. 29906. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule, with a petition if necessary, and charge the appropriate fee to Deposit Account No. 13-4771.

Please charge any additional fees or credit any overpayment related to this IDS to Deposit Account No. 13-4771.

Respectfully submitted,

Date: 04/23/02

By:   
Timothy J. Lorenz  
Reg. No. 41,954

**Ingrassia Fisher & Lorenz, P.C.**  
Customer No. 29906

Enclosures: ☒ PTO-1449  
☒ References  
☐ Foreign Search Report  
☐ Fee  
☐ Other: International Search Report

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PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(use as many sheets as necessary)*

Sheet

1

of

2

**Complete if Known**

Application Number

10/056,157

**Filing Date**

01/24/02

**First Named Inventor**

ALEXANDER, Jr., William

## Group Art Unit

Unknown

Examiner Name

Unknown

Attorney Docket Number

001.0058

## U.S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

[illegible]

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	<p>An article entitled "V-Blast: An Architecture for Realizing Very High Data Rates Over the Rich-Scattering Wireless Channel" by P.W. Wolniansky, G.J. Foschini, G.D. Golden, R.A. Valenzuela; Bell Laboratories, Lucent Technologies, Crawford Hill Laboratory, 791 Holmdel-Keyport Rd., Holmdel, NJ 07733</p>
	<p>An article entitled "Detection algorithm and initial laboratory results using V-BLAST space-time communication architecture", by G.D. Golden, C.J. Foschini, R.A. Valenzuela and P.W. Wolniansky from Electronics Letters, 7<sup>th</sup> January 1999 Vol. 35 No. 1.</p>
	<p>An article entitled "The Most Efficient Implementation of the IQML Algorithm" by Yingbo Hua, from 1994 IEEE Transactions on signal processing.</p>
	<p>An article entitled "Comparative Study of IQML and MODE Direction-of-Arrival Estimators by Jian Li, Senior Member, IEEE Petre Stoica, Fellow, IEEE, and Zheng-She Liu from IEEE Transactions on signal processing January, 1998.</p>
	<p>An article entitled "Two Decades of Array Signal Processing Research"/The Parametric Approach by Hamid Krim and Mats Viberg from IEEE Signal Processing Magazine, July 1996.</p>

Examiner Signature		Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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